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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,369	10/10/2002	Carlos Dominguez-Rios	VELAP005US	1004

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EXAMINER

ABRAMOWITZ, HOWARD E

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,369

Applicant(s)

DOMINGUEZ-RIOS ET AL.

Examiner

Howard E. Abramowitz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-78 is/are pending in the application.
- 4a) Of the above claim(s) 40-78 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☒ Claim(s) 4 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election of group I claims 1-39 in the reply filed on 12/9/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Objections

Claim 9 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 4. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

Claims 5-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims require that the piece being plated be attached as the anode for a cathodic degreasing process, however, cathodic degreasing requires that the piece be attached to the cathode. Accordingly for the purpose of examination it will be assumed that the

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piece is attached as the cathode and that the anode be made of the other claimed materials.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 10-15, 17, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view

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Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343).

Referring to claim 1, Brown et al. discloses that brass can be electrolessly plated onto a circuit board, which contains metal in the substrate (column 6 lines 26-39). It does not however disclose the details of the preparation and subsequent plating step. It is known from Lieber et al. that it is common to treat substrates with an alkaline degreasing step where the solution comprises an aqueous solution of sodium carbonate and sodium phosphate followed by a rinsing step to remove residues (column 5 lines 44-60). It is also known from Wada et al. to perform a cathodic degreasing step using a sodium hydroxide solution and a current value of 3-8 A/dm² prior to plating substrates to remove contaminants from the part to be plated followed by a rinsing step (column 7 lines 25-31, lines 44-56). It is also known from Jensen et al. to perform two cleaning steps an alkaline degrease step followed by an electrocleaning step (column 7 lines 43-57). It is further known from '191 to subject substrates to a boric acid pickling in order to provide a uniformly etched substrate to help adhesion (abstract) followed by a rinsing step.

While Brown et al. fails to disclose the components of the bath, one of ordinary skill in the art would recognize that both copper and zinc ions need to be present in the bath in order to form a brass coating. Therefore it would be obvious to use conventional plating solutions and combine them to form the brass plating bath. For copper Jensen teaches that copper cyanide is a commonly used copper source and that also present in the solution are a complexing agent including sodium cyanide, ammonia, a buffer type

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substance (carboxylic acid) and a pH controller (NaOH) (columns 3-4 lines 25-45). For zinc Takami et al. teaches that using zinc that zinc oxide, sodium hydroxide and Rochelle salts are all present in the electroless bath (examples 1-10). Jensen et al. teaches that after coating the part is rinsed (example 1) it would then be obvious to dry the part.

Referring to claim 10, Tamaki et al. as discussed above the complexing agent comprises Rochelle salts (examples 1-10).

Referring to claim 11, the exact concentrations of the components are not given in the Jensen and Tamaki et al. references however, Regarding the concentrations, generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.)

Referring to claims 12 and 13, Jensen discloses the temperature of the coating can be from 55-100 °C (column 5 lines 27-33).

Referring to claims 14 and 15, Jensen discloses that the plating occurs for 10 minutes to 1 hour (column 5 lines 34-39).

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Referring to claim 17, Jensen discloses that the pH of the electroless plating solution should be between 9 and 13 (column 4 lines 31-40).

Referring to claim 21, the piece will obviously be removed from the platins solution, once this is performed the piece will dry in the air at ambient conditions as this is the natural state of the piece outside of the solution.

Referring to claim 22, while the thickness of the brass piece is not disclosed it would be obvious to form a piece of the claimed thickness by varying the amount of time the piece spends in the electroless plating solution.

Claims 2, 3, 16, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343) in further view of Kanada et al. (US Patent No. 5,759,216).

Referring to claims 2 and 3, Lieber et al. teaches a method for alkaline degreasing using sodium carbonate and sodium phosphate at about 90 °C but does not teach the concentrations of the salts, the time of degreasing or to stir the solution during degreasing. However, Kanada et al. teaches that stirring is common in all stages of plating from degreasing to acid cleaning, and plating (column 12 lines 43-46). Accordingly; it would have been obvious to one of ordinary skill in the art to stir the solution during the degreasing. Regarding the concentrations and temperature,

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generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%). Regarding the time of degreasing, the amount of time spent in the solution will control the amount of grease removed. Therefore the time is a result effective parameter in that it effects the amount of grease removed. It would have been obvious to have adjusted the time to values in the claimed ranges through routine experimentation so as to optimize the amount of grease removed, especially in the absence of a showing of a criticality for using values in the claimed ranges.

Referring to claim 16, as discussed above Kanada discloses that stirring is commonly performed at all stages of the coating process including the deposition.

Referring to claims 19 and 20, '191 does not teach the claimed ranges for the time temperature and concentration of the boric acid. However as discussed above the concentration, temperatures and time of treatments have been deemed obvious especially in the absence of a showing of criticality for using those claimed parameters.

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Claims 4, 9, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343) in further view of Krulik (US Patent No. 4,719,128).

Referring to claims 4, 9 and 18 Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343) teach all of the features of this claim as discussed above with reference to claim 1, except they do not teach to use a counter current rinsing step. However, Krulik teaches that countercurrent rinsing is a known method of rinsing that increases the effectiveness of a given amount of water up to several hundred times. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343) to use countercurrent rinsing as taught by Krulik with an expectation that a given amount of water used for rinsing will be several hundred times more effective.

Claims 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No.

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4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP 362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343). In further view of Puma (US Patent 5,174,870).

Referring to claim 5, Wada et al. teaches performing an electrocleaning step on the part using a sodium hydroxide solution under electrolytic conditions with a current value of 3-8 A/dm² for a time period of 1-2 minutes (column 7 lines 25-31) at ambient temperature. Regarding the concentration although it is not taught it would have been deemed obvious as discussed above. It does not however, teach to use a stainless steel rod as the anode. However, Puma teaches to use stainless steel as an anode during an electrocleaning process (table 3, column 4 lines 3-11, column 3 lines 51-55).

Referring to claim 7, Wada et al. teaches submerging the part for 1-2 minutes as discussed above however, in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.)

Claims 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US Patent No. 5,162,144) in view of Lieber et al. (US Patent No. 4,505,958) in view of Wada et al. (US Patent No 4,790,902) in view Japanese Patent JP

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362177191 A ('191) in view of Jensen (US Patent 3,716,462) in view of Takami et al. (US Patent No. 6,162,343) in further view of Clare (US Patent No. 5,268,045).

Referring to claim 6, Wada et al. teaches performing an electrocleaning step on the part using a sodium hydroxide solution under electrolytic conditions with a current value of 3-8 A/dm² for a time period of 1-2 minutes (column 7 lines 25-31) at ambient temperature. Regarding the concentration although it is not taught it would have been deemed obvious as discussed above. It does not however, teach to use a graphite rod as the anode. However, Clare teaches to use graphite as an anode during an electrocleaning process (column 16, lines 15-49).

Referring to claim 8, Wada et al. teaches submerging the part for 1-2 minutes as discussed above however, in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.)

Referring to claims 23-39, Brown et al discloses that a circuit board is being plated this piece not only contains metal but also contains plastic. Accordingly all the rejections over the corresponding claims 1-22 apply to claims 23-39 except for the cathodic degreasing step, which would not be performed because the coating is being

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applied to a non-conductive piece, so it would be obvious to exclude that step as no charge would flow through the plastic.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


HEA


MICHAEL CLEVELAND
PRIMARY EXAMINER